

REMARKS

Favorable reconsideration of this application is respectfully requested in light of the following remarks wherein, Claims 2-10 have been amended and claims 1 and 11-25 have been canceled, and new Claim 26 is added to the application. Currently, Claims 2-10 and 26 are pending in the present application.

As an initial matter, Applicants express gratitude to Examiner Weeks for the courtesies granted Applicants' attorney during the recent interview. During the interview, Applicants presented a new independent claim, which corresponds to Claim 26 presented herein. As discussed during the interview, the combined references do not disclose or teach the patentable features of the claimed invention.

Claims 1-15 and 21-25 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent no. 3,547,205 to *Nagely*. Claims 16-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Nagely* in view of U.S. Patent No. 5,449,047 to *Schivley et al.*

Independent Claim 26 recites a hydraulic system for mining equipment comprising at least one hydraulic circuit with pressure fluid channels and at least one hydraulic pump, the hydraulic pump being arranged to generate hydraulic power in the hydraulic circuit; at least one power unit for driving the hydraulic pump; at least one hydraulic mining actuator connected to the hydraulic circuit and configured to act on a tool in the mining equipment; at least one hydraulic auxiliary actuator connected to the hydraulic circuit; and means for adjusting the hydraulic power to be led to the mining actuator and the auxiliary actuator connected to the hydraulic circuit, wherein the hydraulic system comprises a main hydraulic circuit and at least one separate hydraulic circuit, and the main hydraulic circuit and each separate hydraulic circuit

are operationally separate from each other, each having a separate hydraulic pump for generating hydraulic power; at least one mining actuator is connected to the separate hydraulic circuit and said mining actuator is configured to be driven by the hydraulic power acting in the separate hydraulic circuit; and the power of the mining actuator connected to the separate hydraulic circuit is arranged to be adjusted by adjusting the generated hydraulic power by adjusting pumping output of the hydraulic pump of the separate hydraulic circuit, wherein the hydraulic pump of the separate hydraulic circuit is controlled by means of a control unit including an adjustment strategy, the pressure of the fluid channel leading from the pump to the mining actuator of the rock drilling machine is monitored by means of a sensor, the information on the pressure obtained from the sensor is transmitted to the control unit, the information on the volume flow obtained from the hydraulic pump of the separate hydraulic circuit is monitored, and the power of the mining actuator of the rock drilling machine is controlled according to the pressure and flow information and the adjustment strategy. None of the art of record discloses these patentable features.

For example, *Nagely* discloses hydraulic pumps 120, 122, and 124 for operating the drill motor 20 and rotary unit 80. In the Office Action, the Examiner states that power units 20, 80 actuate each hydraulic pump 120, 122, and 124. However, the drill motor 20 and rotary unit 80 are mining actuators, and do not power the pumps 120, 122, and 124. In *Nagely*, power units for driving hydraulic pumps are not disclosed.

The Examiner also states that in *Nagely*, the power of the mining actuators 22, 24 are to be adjusted by adjusting means 134, 148 in connection with the pumps 120, 122, 124 for the purpose of adjusting the hydraulic power, speed, of flow generated by the pumps 120, 122, 124. However,

Applicants respectfully disagree. At column 4, lines 32-53, it is disclosed that the system includes a main valve (132) which is a normal directional valve actuated by means of a manually operable lever (134). The main valve (132) includes three positions wherein it can control the feed of the hydraulic fluid to a feed cylinder (26), to the drill motor (20) and to the rotary unit (80) in order to activate different mining situations, namely collaring, normal drilling and bolt tightening. Thus, the main valve (32) and the lever (134) do not adjust the generated hydraulic power by adjusting the pumping output of the hydraulic pump.

Further, the Examiner refers also to a lever (148), which is only a manual transfer device for moving a drill positioning valve (142) in order to move the drill upwards or downwards, see column 5, line 8-13. The drill positioning valve (142) is a normal directional valve, which cannot adjust the generated hydraulic power by adjusting the pumping output of the hydraulic pump. The cited lever (148) is also not able to cause in anyway the pumping output of the hydraulic pump. Accordingly, *Nagely* fails to disclose the feature of “the power of the mining actuator connected to the separate hydraulic circuit is arranged to be adjusted by adjusting the generated hydraulic power by adjusting the pumping output of the hydraulic pump of the separate hydraulic circuit”.

Moreover, as conceded by the Examienr, *Nagely* fails to disclose that the hydraulic system is provided with a sensor for monitoring the pressure of the fluid channel leading to the mining actuator. Nevertheless, the Examiner seeks to rely upon *Schivley* for disclosing this feature.

Schivley discloses an electro-hydraulic system, column 4 line 9, which includes a control system based on an electrical controller (100) such as a microprocessor, column 4, line 17-27. As it is discussed above, the hydraulic system of *Nagely* is purely hydraulic and is without any electronic

control devices. Therefore, it would not have been obvious to combine the teaching of *Schivley* with the teaching of *Nagely*. Furthermore, a person skilled in the art would still not have the needed knowledge to really modify the hydraulic circuit of *Nagely* having several separate hydraulic circuits since *Schivley* relates to a totally differently constructed hydraulic circuit. The suggested combination is not a straightforward situation but it would have required several constructional modifications.

Moreover, *Schivley* discloses pressure sensors (110, 114, 116), a vibration sensor (112) and a rotation sensor (70). However, nowhere in *Schivley* is disclosed that information on the volume flow obtained from the hydraulic pump is monitored. Thus, even if *Nagely* and *Schivley* were combined, the combination would still not include the following features of Claim 26:

the information on the volume flow obtained from the hydraulic pump of the separate hydraulic circuit is monitored,

and the power of the mining actuator of the rock drilling machine is controlled according to the pressure and flow information and the adjustment strategy.

Accordingly, neither *Nagely* nor *Schivley*, in combination or alone, disclose the patentable features of independent Claim 26.

For at least the foregoing reasons, it is submitted that the system of independent Claim 26, and the claims depending therefrom, are patentably distinguishable from the applied documents. Accordingly, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should any questions arise in connection with this application, or should the Examiner believe a telephone conference would be helpful in resolving any remaining issues pertaining to

this application, it is respectfully requested that the undersigned be contacted at the number indicated below.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0573. This paragraph is intended to be a CONSTRUCTIVE PETITION FOR EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully Submitted,

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